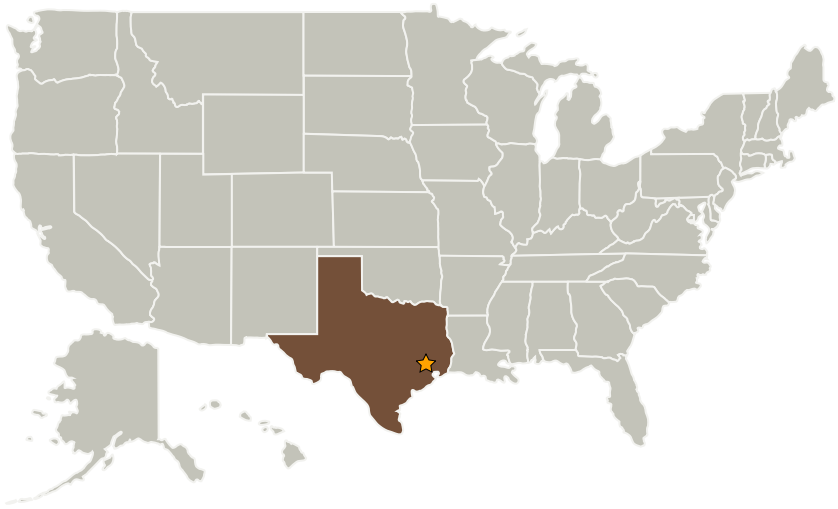
Handheld Microfluidic Blood Ananlyzer, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

Nanohmics proposes to develop a handheld blood analyzer for micro- and hypo-gravity missions. The prototype instrument will combine impedance analysis with optical spectroscopy techniques to provide a reliable means of performing a complete blood count (CBC) using microliters of sample. An advantage of this hybrid strategy is that a complete blood cell count can be achieved using a microfluidic approach that is controlled via a commercially available personal digital assistant (PDA). Recent advances in the handheld computing market have led to small, powerful, devices that are able to interface and control the microelectronics necessary to operate and collect data from the microfluidic chip and maintain a low power budget. The instrument will exploit both the optical and impedance properties of the whole blood to gain discrimination of the individual components and indices (RBC, WBC, Hemoglobin concentration, hematocrit, WBC differential, and RBC indices). The large amount memory and processing power afforded by the PDA will allow the device to store the blood profiles of many individuals and track their changes from test to test.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Nanohmics, Inc.	Supporting Organization	Industry	Austin, Texas

Primary U.S. Work Locations
Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.1 Avionics Component Technologies
    - TX02.1.6 Radiation Hardened ASIC Technologies